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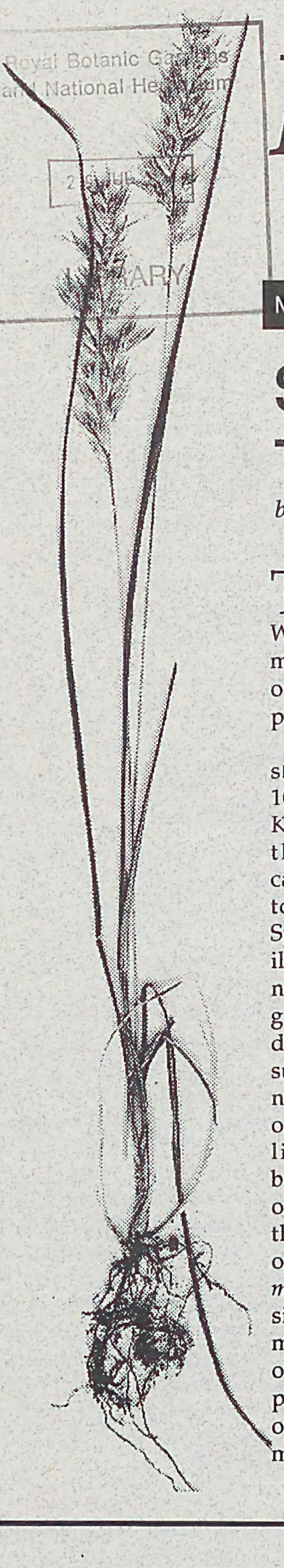

Danthonia

Volume 3 Number 1
June 1994

NEWSLETTER OF THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION

SMOKE, NOT FIRE, MAY BE THE KEY TO GERMINATION

by Kings Park Staff

The research team at Kings Park and Botanic Gardens in Perth, WA, believes that smoke, not fire, may be the key to the germination of many species of Australian plants.

While researching germination strategies for the propagation of 102 difficult to germinate species, Kings Park researchers discovered that smoke-derived materials caused a 10 to 50- fold increase in total promotion of germination. Species have now been grown easily and effectively from seed where no other similar method for propagation has been known. In tests to date the smoke process has been successfully applied to the germination of 41 species and 30 genera of native Australian plants. It is likely that the process will be broadly applicable to a wide range of Australian plants, particularly those that are fire or disturbance opportunists, eg. *Actinotus*, *Eriostemon*, etc. The discovery will have significant implications for habitat management and the conservation of rare or threatened species. The process also provides the first ever option to controlled burning for the maintenance of species which are dependant on fire for reproduction.

The smoke was derived from burning a range of 'bush' materials and was applied as a fumigant, a liquid and in sand. All methods of application increased germination. However, the fumigation method was the most effective and gave more consistent results.

To confirm that heat was not the important factor in germination, the researchers cooled the smoke before exposing the seeds to it.

The Kings Park research unit is now working to identify the components in the smoke that are stimulating germination.

Dramatic promotion of germination has been achieved in the horticulturally significant genera, *Verticordia*, *Conospermum*, *Eriostemon*, *Hybanthus*, *Lechenaultia*, four species of Epacridaceae, *Pimelea*, *Stirlingia* and *Geleznowia*. Development of the first reliable method for propagation of these species may add significantly to the commercial development of Australian plants for cut flower production which could be increased by $2-$5 million on full take-up of this technology. In addition the min-

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EDITORIAL

At the recent conference *Nature Conservation - The Role of Networks*, held in Western Australia, the need for the close interaction between conservation agencies, industry and the community (a principle reason for the establishment of the ANPC) was again highlighted. All groups represented at the meeting agreed with this view.

It was also stressed that while there is a need for conservation to have coordination at a national level, it is still imperative that the majority of the interaction takes place at the regional and local levels. It is envisaged that a major part of this interaction in the ANPC will involve members being able to meet and discuss their projects with colleagues. This has already been happening in Tasmania for the past two years and is now starting in Victoria. Both groups are in a position to make good use of the values of networking and to take advantage of the strengths of integrated conservation.

Other members are encouraged to consider what opportunities exist to do this at either the regional or local level. Some of the people that you think should be involved may not as yet be part of the ANPC. Their participation in regional/local meetings may be all that is required for them to develop an interest. If members wish to start such local networking and spreading the word, ANPC pamphlets are available from the National Office.

The views expressed at the WA conference were proof that the ANPC has correctly identified the areas that need to be addressed. Many of them, however, are dependent on members actively promoting the need for plant conservation in their area and effectively networking with other members.

Mark Richardson

AARGH!!

This notice was circulated on the Australian National Botanic Gardens e-mail network recently (we don't talk to each other any more-we send electronic messages!) "At a seminar recently, Peter Lindler (of South Africa) presented preliminary molecular results indicating that Australian species of the grass genus *Danthonia* are better referred to the published genus name *Rhytidosperma*. This supports earlier morphological work by Connor and Edgar which was not taken up. Combinations under *Rhytidosperma* are available for all published Australian *Danthonias*. We are not proceeding to name changes pending more final results."

Staff of the ANPC National Office have been heard singing stirring choruses from "Les Miserables". But we always said that this journal was called *Danthonia* because it sounded such a nice name!"We shall not be moved"

Danthonia

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ing industry will be able to better restore degraded lands.

Environmental concerns regarding the sustainability and ethics of 'wild picking' may also be alleviated by application of this new germination process which offers a cost effective method of greenstock production.

The smoke process has also been applied to unburnt habitat sites and has stimulated germination of seed in the soil bank of a wide range of disturbance- and fire-promoted species. These species are usually only found after roadside disturbance or bushfires and a significant proportion of the rare or threatened flora of Western Australia fall into these germination categories.

The simplicity of this new procedure and its wide ranging implications for the development of ex situ conservation and habitat stimulation of dormant seed banks of rare or threatened species, promises important new approaches to rare flora management strategies.

ANPC VICTORIAN MEETING

A meeting of Victorian ANPC members and others who are interested in the conservation of plants in Victoria will be held over dinner on Wednesday, 20 July at the Carringbush Hotel, 228 Langridge Street, Abbotsford, at 6pm (for 6-30). The object of this preliminary meeting is to get interested people together, to elect an informal steering committee and to look at priorities for plant conservation in the state. Contacts are; Adrian Moorrees at DCNR, ph 4508696 or Dale Tonkinson, Greening Australia, ph 6541800.

ANPC ACTIVITIES IN VICTORIA

The following article is a report on a recent trip to Melbourne by the ANPC's Extension Officer, Jeanette Mill.

The Victorian College of Agriculture and Horticulture, Burnley, was first port of call, to speak with John Delpratt. Two projects of note are currently underway at the college. A native grasslands garden bed is providing valuable experience for staff and students in the propagation and maintenance of Australian grassland species. Importantly, it is also raising the awareness of future horticulturists about one of the most significant and pressing of Victoria's conservation issues.

John is conducting his own post-graduate research into the potential for seed production of grassland species in cultivation, including some endangered species. Plants are being propagated and grown to maturity in large containers at the college. We look forward to hearing from John about any interesting findings as a result of his work.

A related project John is involved in is the development of a seed orchard, to maintain viable seed sources, and reduce the need for collection of material from remnant populations. The convenor of this joint project, Matt White, botanist with the Flora and Fauna Branch, Victorian Department of Conservation and Natural Resources (DCNR), can be contacted for further information (phone 03-450 8600). John Delpratt is keen to contact people with expertise in seed biology/physiology.

Melbourne Zoo is engaged in an important public education program, in relation to endangered grassland plants. John Arnott, horticultural technician and my guide for the day, and Barry Cross, gardener, have prepared an article about this award winning initiative, which appears elsewhere in this issue. Future projects include the use of endangered grassland and woodland plants in the Australian Habitat Zone, and endangered rainforest plants in the Butterfly House.

Stephen Forbes, of the Victorian Department of Conservation and Natural Resources, gave me an overview of the Victorian Flora and Fauna Guarantee Act, which the Department administers.

Under this legislation, taxa, ecological communities and threatening processes can be nominated for listing. Subsequent to listing, Action Statements are drawn up.

I yearned for Canberra's crisp autumn weather as my umbrella blew inside out for the umpteenth time on my way to a meeting with Dale Tonkinson from Greening Australia (Victoria), Adrian Moorrees, a member who is employed with the VCNR, Andrew Batty from the Royal Botanic Gardens, Melbourne, (see *Danthonia* vol. 2, No. 1) and Bob Parsons, a botanist from La Trobe University and ANPC Advisory Committee member. As a result of this gathering, a Victorian regional ANPC meeting will shortly be held, with regular meetings thereafter if there is sufficient interest. Likely topics for discussion by this local arm of the network include strategies to encourage academia to become more involved in endan-

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ZIERIA BAEUERLENII - A REPRIEVE!

In the last issue (Vol 2 No 4) of Danthonia our species profile described Zieria baeuerlenii. The species occurs only in Bomaderry Creek Bushland, near Nowra, New South Wales. The local council's plans to build a road through the middle of the Bushland inspired a court action by a local resident last year This action was taken under the NSW Endangered Fauna (Interim Protection) Act 1991.

In this article, we hear more about this landmark court decision and in particular the precautionary principle. The author is May Leatch who took the case to court.

In 1987 the future for *Zieria baeuerlenii* and the Bomaderry Creek Bushland looked bleak indeed. Urban expansion and roads planned as far back as the 1960s were destined to either obliterate the *Zieria* or to preserve it as an isolated few plants in an 'urban zoo'.

The November 1993 judgement by Justice Stein in the NSW Land and Environment Court (relating primarily to the threat to 'endangered' animals from a proposed road through the middle of the Bushland) has given the *Zieria* and its surrounding habitats a temporary reprieve. I say temporary, because the local council is doing yet more studies in an attempt to validate its proposal, and the case is likely to return to court. The tragedy is that while there are many legitimate planning reasons why this bushland should be kept intact as a breathing space and recreational area in the midst of an expanding suburbia, it was only the Endangered Fauna (Interim Protection) Act 1991 which allowed a legal challenge.

For subdivisions and roads, councils in NSW can quite simply give themselves development approval for their own proposals, and are not required to do even the rudimentaries of an environmental impact statement. So it was only the presence of small populations of Yellow-bellied Gliders, Spotted Quoll and the Giant Burrowing Frog, all classified as threatened or in danger of extinction in NSW, which allowed the court challenge.

In his judgement, Justice Stein noted that 'it is somewhat strange that under State law rare and endangered plants are not accorded similar protection to rare and endangered fauna...'. He could well have made reference to the lack of protection for the huge array of plants and animals *not* classified as in danger of extinction.

The 200 ha. Bomaderry Creek Bushland is home to an amazing variety of plants and animals (including some feral ones) which have somehow survived despite urban encroachments and the usual bashing around that such remnant bushlands receive. The bushland is public owned land, being Crown Land and Council owned land, hence the strong public debate about its future.

Besides the rare *Zieria*, the Bushland is home to four nationally rare species including *Eucalyptus langleyi* which, along with the *Zieria*, is listed in Schedule 1 of the Commonwealth Endangered Species Protection Act 1992. So far, 125 bird species, 10 frogs, 17 snakes and lizards, 17 mammals and 330 plants have been recorded, including 7 plants classified as 'botanically significant".

THE PRECAUTIONARY PRINCIPLE

Justice Stein's judgement in the Bomaderry Creek case has established that the precautionary principle is relevant to the determination of applications to take or kill 'endangered' fauna under the NSW National Parks and Wildlife Act. This application of the precautionary principle is a precedent which has the potential to impact broadly on natural resources decision making because it places a burden of proof on the proponent of development. The proponent in such cases will be required to establish that serious or irreversible harm to the environment will not occur as a result of the development.

When the consequencies of such harmful development are uncertain, a cautious approach may require the decision maker to favour a no-development option, at least where ameliorative measures are incapable of overcoming the decision maker's uncertainty.

In the Bomaderry Creek case, the Council could not prove that the proposed road would not be harmful to the Yellow-bellied Glider or the Giant Burrowing Frog, or that the ameliorative measures proposed (underpasses for the frog and poles for the glider) would be effective. The existence of an alternative route which skirts the bushland was also an important factor in this case.

As far as I am aware this is the first occasion when the precautionary principle has been applied by an Australian court, although the principle is recognised in the Commonwealth EPA legislation. This was also the first case brought under the NSW Endangered Fauna (Interim Protection) Act 1991.

It is possible to regard the Bomaderry Creek case as the first indication that Australian courts are prepared to challenge the dominant view of the environment as merely an element to be considered and managed during the project approval process. It is likely that in the future Courts will apply the precautionary principle more broadly in cases relating to development of natural resources generally. The scope of the principle to affect decision making makes the Bomaderry Creek case a landmark decision in natural resource law.

ANPC in Victoria

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-gered plant research, sources of funding, publicity for new initiatives in conservation, and the rapid spreading of information about calls for submissions.

The results of these meetings should make interesting reading in future issues of *Danthonia*, and hopefully other groups will spring up around the country to discuss issues at a local level. Details of upcoming meetings could be announced in *Danthonia*.

The National Office has state lists of members' contact details, for those interested in contacting other members. Copies of these can be obtained by contacting Jeanette on (06) 250 9509.

NEWS

Federal speaker plants endangered species

The speaker of the House of Representatives, The Hon. Stephen Martin, took part in a ceremony at Parliament House in Canberra, when the first of over 100 *Zieria* 'Carpet Star' plants was placed in shrub plantings near to the formal garden in front of the House and among the 13 hectares of shrubs at Parliament House. Mr Martin spoke about the plight of threatened plants in Australia and about federal Government initiatives for conservation.

The Speaker at the Zieria planting .

Zieria 'Carpet Star' is the endangered *Zieria prostrata* from the Coffs Harbour area of New South Wales. A royalty from the sale of every 'Carpet Star' goes to the ANPC, thanks to the initiative of Russell Costin of Limpinwood Gardens Nursery, a member of the Tropical Ornamental Plant Supplies marketing group.

Royalty cheque received

The ANPC National Office was delighted to receive recently a cheque for $415. This was a royalty payment on the sale of *Zieria* "Carpet Star' from Tropical Ornamental Plant Supplies. Many thanks "TOPS'!

NSW Reviews Crown Lands

The New South Wales Department of Conservation and Land Management (CALM) is reviewing all lands that come under its control. Quite often this includes large parcels of land that contain good examples of remnant habitat.

CALM is prepared to receive applications from groups who are prepared to manage these parcels of land under the form of a trust. Recently a group near Bungendore made an application for land containing good quality remnant vegetation some 7km from the town. The trusts need to have from three to seven members.

As such remnants are so important to conservation, it is recommended that any NSW members who are aware of such land parcels consider applying for them under this scheme. Advice on this can be provided by regional offices of NSW-CALM.

Grassland conservation at Melbourne Zoo

By John Arnott and Barry Cross

Adapted from an article published in Australian Horticulture and used with the permission of the authors and publisher.

With a sharp focus on the interactions between animals and their environments, modern zoos are concerned not only with the survival of the species but also the conservation of habitat. Given this emphasis on habitat, the modern zoo has the potential to be considered as much a botanical collection as it is a zoological one. Plant conservation therefore becomes another component of an overall conservation strategy.

Melbourne Zoo's ' Endangered Grasslands Project' reflects these changes and represents our first efforts to date.

The horticulture department's involvement in the cultivation of rare and threatened species was initiated out of a series of staff workshops in 1989. This interest prompted a study into possible participation in ex-situ conservation of such plants. Revenue raised by a recycling program undertaken by the department was used to fund the project.

The study considered a number of factors such as the species to be displayed, location, functions, aims and indeed what form the display itself would take. It was decided that the development should be aimed at regional rare and threatened plant species set in their relevant habitat. This would, we believed, increase the potential for public education and interpretation.

Of all the wildlife habitats in Victoria, native grasslands and grassy woodlands are without doubt the most threatened. Given this, the project has focused its efforts on these endangered habitats.

Native grasslands and grassy woodlands once covered one-third of Victoria, however due to their suitability for agriculture, only 0.5% of this habitat still exists. Today they are restricted to small, isolated remnants on road and rail reserves, in cemeteries, uncultivated paddocks and on industrial land on the suburban fringes of Melbourne. These remnants are of great significance, with one-third of the state's threatened plants and animals largely restricted to these grassy ecosystems.

Part of the grasslands bed at Melbourne Zoo

A small lawn on the north side of the platypus house was chosen as the site for the display. The area was landscaped using a sandy loam, chosen for its drainage qualities. Basalt rock was used sparingly to help protect the planting. A path meanders through the display, allowing closer inspection by visitors.

In the broadest sense the display has been designed and planted to be representative of Victorian temperate grasslands, in particular those of the Basalt Plains, found to the west of Melbourne. Essentially the project aims to display this flora and its associated rare plants within the context of a 'habitat at risk'.

To simulate 'natural grasslands' at the zoo, a number of plants indigenous to this region have been included and form the basis of the planting. These include herbs such as *Arthropodium strictum, Bulbine bulbosa, Dianella revoluta, Eryngium ovinum, Helichrysum rutidolepis, Rhodanthe anthemoides, Microseris lanceolata* and *Stylidium graminifolium*.

The grasses used are predominantly *Themeda triandra*, along with *Poa labillardieri, Stipa scabra* subsp. *falcata* and *Dichelachne crinita*.

There are 15 species of rare or threatened plants currently grown. Amongst these are *Rutidosis leptorrhynchoides, Senecio macrocarpus, Lepidium hyssopifolium, Psoralea tenax* and *Carex tasmanica*. Information on origin, provenance, propagation, and so on, is maintained.

The cultivation of rare and threatened plants within the display requires a high standard of maintenance and management. Whilst in some cases the requirements are straightforward, many of the species are short-lived perennials and propagation from seed and cuttings is essential.

The display serves as a 'shop front' for grasslands and their conservation, providing community access and a quality experience to over a million people per year. The system of signs for the display has been developed to relate simple, clear messages about native grasslands and the need for conservation measures. The project provides an opportunity to develop an integrated approach by combining the public education function with the ex-situ cultivation of threatened plant species.

Ideally all species should be conserved as evolving populations in the wild, however the ex-situ component in an integrated approach can:

- provide propagation material to assist in the recovery of species in the wild;
- reduce pressure on wild populations through distribution of material;
- provide a backstop to extinction via living collections and seed storage; and
- develop an information base, facilitating research into propagation, cultural requirements, seed storage and genetics.

Development would not have been possible without the cooperation of several organisations and institutions. We acknowledge the support of the Australian National Botanic Gardens, La Trobe University Botany Department, Greening Australia (Vic), and the Department of Conservation and Natural Resources (Creswick) just to name a few.

The Endangered Grassland project is just one of the ways the zoo is helping to conserve grasslands. We are also involved with the management of two threatened grassland animals, the Eastern Barred Bandicoot (*Perameles gunnii*) and the Striped Legless Lizard (*Delma impar*). There are also plans to develop an integrated display involving mammals, reptiles, birds and invertebrates as well as plants. This area would be part of the Australian Habitat Zone which is presently at the design stage.

Plant conservation in Australia is becoming increasingly organised and co-ordinated. The Australian Network for Plant Conservation is establishing an Australia-wide, multi-site, endangered species collection. The ANPC is taking a leading role in providing a focus for its member organisations and assisting in the coordination of conservation programs around Australia. Currently there are discussions being held to consider the need for a seed orchard for grassland plant species from the Basalt Plains. This would help reduce the pressure on remnant populations caused by over-collection. It would produce larger amounts of seed for use in projects that have not been previously possible, such as road reservations and large landscape projects. The zoo is involved in these discussions and has representation on an advisory group to the project. Werribee Zoo was previously suggested as a possible site.

At the recent Association of Zoo Horticulture (USA) inaugural conservation awards, the 'Endangered Grassland' display won both the conservation exhibit and conservation program sections. Such recognition convinces us that we are heading in the right direction in zoo horticulture.

Plans are underway to further the educational role of the display including the production of an information brochure, workshops and further schools-based programs. The display has become a part of the zoo's overall public education commitment.

Still many people do not immediately recognise the value of what they see. Some consider it to be an untidy 'weed patch' the gardeners have forgotten to mow. There are, however, many who can see the value of this type of display and indeed the need for conservation measures for our remaining native grasslands. To this end we believe the display is achieving its aims. The notion that zoos may be important to plant conservation was considered unlikely a few years ago. The Endangered Grassland project demonstrates that zoos can successfully integrate into the plant conservation network, and, given their focus on habitat, have a key role to play.

From an article originally printed in *Australian Horticulture*, February, 1994, pp 93-97.

John Arnott is a horticultural technician and Barry Cross is a gardener. Both work at the Melbourne Zoological gardens.

Footnote. A survey of responses to the Endangered Grasslands Display at Melbourne Zoo was conducted by Greening Australia. This demonstrated an overall positive reaction to the display, especially for its education value, with many people keen to learn more. Of 50 people questioned, 30 were not aware that grassland habitats were endangered, until visiting the display.

Endangered grasslands bed
rare and threatened plant species 1993

Carex tasmanica	Vulnerable in Victoria Nationally Rare
Discaria pubescens	Vulnerable inVictoria Nationally Rare
Glycine latrobeana	Vulnerable in Victoria Nationally Vulnerable
Helichrysum sp. aff. acuminatum	Rare in Victoria
Lepidium aschersonii	Endangered in Victoria Nationally Rare
Lepidium hyssopifolium	Endangered in Victoria Nationally Endangered
Leptorhynchus panaetioides	Vulnerable in Victoria
Pimelea spinescens subsp. spinescens	Endangered in Victoria Nationally Vulnerable
Psoralea tenax	Endangered in Victoria
Pterostylis truncata	Endangered in Victoria
Rutidosis letorrhynchoides	Endangered in Victoria Nationally Endangered
Senecio macrocarpus	Endangered in Victoria Nationally Vulnerable
Swainsona plagiotropis	Endangered in Victoria Nationally Vulnerable
Thesium australe	Endangered in Victoria Nationally Vulnerable

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BOOK REVIEW

MANAGEMENT OF ENDANGERED PLANTS

CSIRO Publications ,Melbourne
pp182, rrp $49.95

Author:Simon Cropper

Reviewed by Robert Boden

Interest in Australian endangered plants is moving from the initial essential phases of identification and distribution survey to species management in the wild. Parallel with this are detailed studies of the biology and ecology of rare and threatened species to provide the information needed to develop effective management programs.

Most readers of *Danthonia* will be familiar with the efforts of William Hartley, John Leigh and John Briggs, of CSIRO, in redefining IUCN criteria for classifying rare and threatened plants to meet Australian conditions and state of knowledge (Hartley and Leigh, 1979, Leigh, Briggs and Hartley, 1981, and Briggs and Leigh, 1988).

The national database of rare and threatened plants is now well established and in a form which can be amended and refined as new survey data becomes available. State and territory lists are also maintained to meet individual legislative and management needs.

The task of managing endangered plant populations in situ is however still in its infancy. It involves both an understanding of the plant's biology and a knowledge of its interactions with other plants and animals in its habitat. Most conservation managers have the task of managing habitats rather than species. Managers also have to recognise other uses such as recreation and water catchment. The recent well-publicised bushfires in New South Wales may also introduce a political influence on management in relation to the contentious issue of frequency of deliberate burning.

Management of Endangered Plants by Simon Cropper is therefore a timely publication and particularly useful for members of the Australian Network for Plant Conservation because it is written from an Australian perspective.

The first five chapters cover basic conservation theory under the titles of rarity and extinction, conservation strategies, finding rare plant populations, monitoring known populations and management techniques. The theory is significantly enhanced for student use by the inclusion of many Australian examples and references. Most other books on this subject have been written with a bias towards northern hemisphere species and conditions and do not always translate well to the Australian environment.

Chapter 6 presents ten case studies in reasonable detail and with appropriate references. These studies demonstrate some of the theoretical concepts presented in the earlier chapters. They also indicate the amount of detailed research which needs to be done with each species. Translated to the large number of Australian plants endangered on a national basis, it emphasises the size of the research task and the need to establish clear research priorities.

Most of the studies are of species occurring in Victoria. This results in part from the fact that changes to the natural vegetation and therefore threats to individual species are great in Victoria. It also reflects the strong lead Dr Bob Parsons and Latrobe University have taken in biological research on endangered species and in attracting funds and postgraduate students to work in this field.

Appendices include information sources and contacts which are useful but which will inevitably become outdated within the useful text life of the book. This type of information, which is constantly changing as government and non-government agencies reorganise and re-reorganise, is more appropriate to newsletters like *Danthonia* than books. Although occupying only nine pages in 182, they add unnecessarily to the cost which, at $49.95, will already deter many tertiary students who could benefit by having their own copy for continuous reference rather than relying on limited library resources.

Appendix 3, *Some Tools in Plant Management*, outlines a number of important topics relating to rare plant management which are either relevant to a range of chapters or are not covered elsewhere in the book. This information is useful for students and enhanced by inclusion of 'further reading' lists. The book contains a comprehensive reference list with 404 entries. There is a useful glossary but it occupies ten pages or 5.5 per cent of the book, raising the question 'should every scientific text have its own glossary?'.

The book contains numerous photographs but unfortunately many of these are rather dark. The number of typographical errors suggests that too much reliance has been placed on the 'spelling checker' which detects spelling errors but not incorrect use of correctly spelt words.

Finally, CSIRO should be congratulated for publishing *Management of Endangered Plants* and Simon Cropper for writing it. A work of this nature may not have attracted commercial publishers and the cost may have been higher if it did. CSIRO has an important role in ensuring that works of this nature are published.

CONFERENCE REPORT

The Role Of Networks

by Mark Richardson

The latest in a series of nature conservation conferences, organised by CSIRO Division of Wildlife and Ecology, was held in Geraldton, Western Australia, from 15-20 May, 1994.

The conference was entitled "The Role of Networks" and concerned both *biological* networks as a conservation resource and *people* networks as a way of achieving nature conservation.

Papers were presented over the entire five days, with numerous concurrent sessions. They were presented by speakers from Australia and overseas and the topics included networks for

- indigenous people
- landcare groups and land owners
- mining
- conservation education and extension
- agency and community and
- the development and maintenance of networks.

I presented a paper discussing ANPC's role in an integrated approach to plant conservation in Australia.

The first keynote speaker was Michael Soulé, a conservationist from the University of California, who spoke on a wildlands project in the United States. Many of the points that he raised were reiterated by the other speakers over the next five days. Soulé strongly advocated the 'bottom up' approach to ensure much greater community involvement and at as early a stage as possible. Other strong messages coming from the conference were the need for trust - on all sides - to ensure the success of networks and the need for the use of language that is understood across the range of people being networked.

As at the ANPC conference, the involvement of indigenous people from other countries was greater than for Australian Aborigines. It again emphasised the need for the 'conservation community' in Australia to make what they are doing either relevant or in some way connected to the needs of indigenous peoples. This was brought out very well by the speaker from WWF Pakistan.Much of the work that he had done to secure an area of natural pine forest in central Pakistan involved catering for the needs of the local community (including schooling and agriculture) and removing the community's need to actively overexploit the forest.

The Australian farming community or their involvement in conservation was well represented by speakers discussing numerous projects, in particular Landcare. Jocelyn Chatfield from Western Australia gave an inspiring talk on some of the work being done on properties in WA and the role of Landcare in nature conservation.

As the conference was dominated by papers, the majority of the actual networking between delegates was done during the social periods of tea breaks, lunch etc. Even though this was a slower way for people to start interacting and would have been considerably assisted by formal workshopping, the conference was still an excellent opportunity to meet new colleagues. This was particularly the case for delegates in the east who rarely get the opportunity to meet their counterparts in the west and vice versa.

The CSIRO conference, like the ANPC conference, brought together people from a wide range of areas who would normally have little opportunity (or apparent reason) to meet. This reinforced the feeling that the ANPC is very much on the right track and is already providing the means for establishing much of the networking that is needed in nature conservation.

One matter that is still to be resolved is the need for plant-conservation to be promoted more. It still lags far behind animal conservation in terms of perceived importance. It is one of the major dichotomies that needs to be addressed by both off site and on site conservationists. Perhaps the end of separate botanic gardens and zoos is approaching!

DIARY

July 4-6, **Symposium on Origin and Evolution of the Flora of the Monsoon Tropics**, Australian Systematic Botany Society, Venue: Atherton, Qld. Contact Mr J Clarkson, Queensland Herbarium, tel 070 921 555.

July 10-15, **International Conference on Rural Issues**, Venue: Townsville, Qld. Contact; 077 213 993, fax 077 211 910

July 17-22, **The Future of Tropical Savannas; Managing Resources and Resolving** Conflicts. Contact: Dr R Jones Division of Tropical Crops and Pastures, Private Mail Bag, Aitkenvale, Qld 4814

August 20-26, **6th International Congess of Ecology**, venue: Manchester UK. Contact: Secretary, 6th International Congress of Ecology, Dept of Environmental Biology, The University, Manchester, M19 9PL, UK

September 12 -November 4, **Plant Conservation Techniques Course**, Royal Botanic Gardens, Kew, UK. The course has the following objectives: • to enhance the student's awareness of the issues and methods used in plant conservation • to enable the student to explore how issues and methods are related to each other • to encourage students to think of their own, more speciaised, studies and experiences in a broader context, encompassing social, ecological and evolutionary factors • to develop problem solving skills and applied practical skills of value in conservation.

September 25-28, **National Conference; Back to Basics; Managing Resources for Parks, Recreation and People,** Venue: Wagga Wagga, NSW. Contact: RAIPR, PO Box 603, Dickson,ACT 2602

September 26-30, **World Heritage Visions and Values '94 Conference,** Venue: Cairns, Qld. (Main themes of the conference are role of environmental education in promoting public participation in natural resource management, wilderness management, cultural copyright, alternative approaches to conservation education, ecotourism and environmental rehabilitation.) Contact: Meetlink, PO Box 1082, Cairns, Qld 4870

October 4-6, **A Vision for A Greener City**, Greening Australia's 1994 national conference, Fremantle, Western Australia. The conference will address the role of vegetation in urban environments. The 1994 National Greening Australia Conference aims to increase awareness of the significance of vegetation in creating more livable urban areas and to improve planning and management practices related to vegetation in urban and surrounding environments.

Further information from Motive Conventions, GPO Box M973, Perth, WA 6001, phone (09) 322 2666, fax (09) 322 1417.

November 10-13, **Forest Canopies; Ecology, Biodiversity and Conservation**, Venue: Sarasota, Florida, Contact: Dr Meg Lowman, Director of Research, Selby Botanical Gardens, 811 South Palm Avenue, Sarasota, FL 34236, USA

Advance notices:

March 1995, **Techniques for Plant Conservation - Training Course,** Canberra, ACT, Australia, contact: ANPC, 06-2509 509

July 10- September 1, 1995, **Plant Conservation Techniques Course**, Kew, UK, Contact: Education and Marketing Department, Royal Botanic Gardens, Kew, Richmond Surrey, TW9 3AB, UK

September 1995, **2nd ANPC National Conference,** Perth, WA. Contact: ANPC, 06-2509509

September 25-29,1995, **BGCI- 4th International Botanic Gardens Conservation Congress,** Perth, WA, Contact: Dr Kingsley Dixon, Kings Park, 09-321 5065, fax 09-322 5064.

Congress and Conference Information

Plans are underway for next year's BGCI 4th International Botanic Gardens Conservation Congress, which will be held in Perth from 25-29 September. The first official announcement will be sent out soon. The planning committee is working on a 4½ day conference, Monday to Friday, with a mid-week excursion. There will also be pre- and post-conference tours. Conference week will be "Wildflower Week" in WA.

The 2nd ANPC National Conference will also be held in association with the International Congress. Actual dates of the Conference are still to be decided.

Details about the Congress from Kingsley Dixon at Kings Park, telephone numbers above.

Training Course Planned

The ANPC National Office intends to organise a training course in Conservation Techniques. Planning is in the early stages but it will probably be held in Canberra next March and will be a 2-week residential course. Details in the next issue.

THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION MEMBERSHIP LIST

The date (1994) indicates that the member has joined or renewed for that year. Addresses and names of contact persons are available from the National Office.

ACT Parks & Conservation Service, ACT
Botanic Gardens of Adelaide, SA, (1994)
Albury Botanic Gardens, NSW
Alcoa of Australia Ltd.; WA
Ian Anderson, ACT (1994)
Arid Land Botanic Garden, SA
Assn. of Societies for Growing Australian Plants
Australian Association of Bush Regenerators
Australian Forestry Council
Australian Mining Industry Council
Australian National Botanic Gardens (1994)
Australian Nature Conservation Agency (1994)
Australian Tree Seed Centre, CSIRO
Australian Trust for Conservation Volunteers
Peter Barrer, ACT (1994)
Stephen Barry, Qld.
Dr Robert Boden, ACT, (1994)
Bonalbo Central School, NSW
Botanic Gardens Conservation Intl. (1994)
Dr Barbara Briggs, NSW
Dr AHD Brown; ACT
Kate Brown (1994)
S Brunskill, Vic (1994)
Brunswick Valley Heritage Park, NSW, (1994)
Dulcie Buddee, NSW (1994)
P Bundock, NSW, (1994)
C Burke, Qld
R Burns; Tas, (1994)
Burrendong Arboretum Trust; NSW, (1994)
Dr G Burrows, NSW
Center for Plant Conservation, USA (1994)
Irene Champion, Qld (1994)
Anne Coates; WA
J A Cochrane, WA, (1994)
Coffs Harbour City Council; NSW
CSIRO, Division of Plant Industry
Dept of CALM, WA (1994)
Conservation Commission of the NT
N & J Cowie, NSW (1994)
I Crawford, ACT, (1994)
S Cropper, Vic (1994)
Deakin University, Rusden Campus Library, Vic
S Denham, NSW, (1994)
Dept of Parks Wildlife and Heritage, Tas (1994)
Mr J Delpratt
Mr S Donaldson; ACT
Max Elliott, NSW
Eurobodalla Botanic Gardens, NSW
Elizabeth Fenton, Vic
Flecker Botanic Gardens; Qld (1994)
Julie Foster, ACT (1994)
Friends of North Coast Regional B G; NSW(1994)
Friends of the Points; Vic
E George; WA, (1994)
George Caley Botanic Garden; NSW
L Gilfedder; Tas
Gladstone Tondoon Botanic Gardens; Qld, (1994)
Roger Good, NSW
David Gordon; Qld
Dr Janet Gorst; Tas
R Gourley, ACRT, (1994)
Joanne Green, NSW
Scott Green, UK
Greening Australia (ACT)
Greening Australia (NSW)
Greening Australia (Vic)
Greening Australia (WA)
Barrie Hadlow; ACT
Laurel Hemming, Vic
Peter Hind, NSW
Honiara Botanic Gardens;Solomon Islands(1994)
Hunter Region Botanic Gardens; NSW, (1994)
Jan Heisler, NSW
Illawarra Zoological Society, NSW (1994)
Joseph Banks Native Plants Reserve, NSW (1994)
Gregory Jackson, ACT
Susan Johnston, ACT
Kebun Raya Indonesia(1994)
Kingfern Natives; NSW (1994)
Kings Park and Botanic Gardens; WA
Kuringai Municipal Council, NSW, (1994)
J Landsberg, ACT (1994)
Limpinwood Gardens Nursery, NSW
WJF McDonald; Qld, (1994)
Alex Mackenzie NSW (1994)
Bob Makinson ACT (1994)
David Mason; NSW
Mt Coot-tha Botanical Gardens; Qld
M Mathes, NSW, (1994)
S Mattingley, ACT
Merungle Hill Landcare, NSW, (1994)
J Meyer, TAS
G Mitchell, NSW, (1994)
J Moffatt, Qld (1994)
B Mole, Vic, (1994)
A Moorrees, Vic, (1994)
Myall Park Botanic Garden, Qld
Sharon Nash, NSW
National Botanical Institute, South Africa
A Nicol, NSW, (1994)
N Nicholson, NSW, (1994)
L Nieboer, Vic
M Noble, NSW
Norfolk Island Botanic Garden
NSW-NPWS, Queanbeyan Region
NSW-NPWS, Northern Region
North Forest Products; Tas, (1994)
Olive Pink Flora Reserve; NT,(1994)
J Overeem, NSW, (1994)
M Oxford, SA
Dr. Bob Parsons; Vic, (1994)
Joe Perner NT (1994)
J Playford, Qld, (1994)
K Querengasser, Qld
Brian Quinn, Vic
Randwick City Council NSW
Rare Plant Consortium, Canada (1994)
Redlands Shire Council, Qld (1994)
S Rempel, Canada
Brett Robinson NSW
Royal Australian Institute of Parks and Recreation,
Royal Botanic Gardens, Melbourne, Vic
Royal Botanic Gardens, Sydney; NSW
Royal Tasmanian Botanical Gardens
Esma Salkin; Vic (1994)
Marilyn Smith, NSW
H Smith, NSW
SGAP - Canberra Region Inc
SGAP - Dryandra Study Group
SGAP - East Hills Group
SGAP - Grampians Group; Vic, (1994)
SGAP - Grevillea Study Group
SGAP - Maroondah Inc (1994)
SGAP - New South Wales Ltd.(1994)
SGAP - Newcastle; NSW, (1994)
SGAP - North Coast; NSW
SGAP - North Shore; NSW
SGAP - North West; Tas, (1994)
SGAP - Pine Rivers; Qld
SGAP - Queensland Region
SGAP - South Australia Region
SGAP - South West Slopes; NSW
SGAP - Tasmania Region
D Snape, Vic (1994)
Stony Range Flora Reserve, NSW (1994)
JH & I E Story, Qld (1994)
Sunraysia Oasis Botanical Garden, Vic
Suva Botanical Gardens; Fiji (1994)
D Swift, Tas (1994)
Jane Tarran, NSW
Tasmanian Arboretum Inc (1994)
R Taylor, USA, (1994)
P Thomas, RBG Edinburgh, (1994)
L Thompson NSW (1994)
Threatened Species Network (NT), (1994)
Threatened Species Network (QLD), (1994)
Townsville Botanic Gardens; Qld
Tumut Ecology Reserve Trust; NSW
R Turner, ACT
Vailima Botanic Gardens; Western Samoa
VCAH Library, Burnley, Vic
VCAH Dookie, Vic
B Vanzella, NSW
Waite Arboretum, Vic
D Wallace, Vic
B Wannan, NSW
C Ward, NSW (1994)
Matt White, Vic (1994)
Wildflower Society of Western Australia
Wildflower Soc. of WA - Mandurah, (1994)
T Wilkinson, NSW
J & A Willinck, NSW
John Wrigley; NSW (1994)
Wollongong Botanic Gardens (1994)
World Wide Fund for Nature Australia
Zoological Parks Board of New South Wales
Zoological Board of Victoria (1994)

Donations Received from:
WJF McDonald
Elizabeth George
J Overeem